



United States
Environmental Protection
Agency

Office of Public Affairs
Region 5
77 W. Jackson Blvd.
Chicago, Illinois 60604

Illinois, Indiana,
Michigan, Minnesota,
Ohio, Wisconsin

U.S. EPA Proposes Cleanup Plan for the Dover Chemical Corporation Site

Dover, Ohio

August 1999

Public Meeting

The U.S. EPA will sponsor a public meeting to explain the proposed removal action plan and the alternatives presented in the Feasibility Study. Oral and written comments will be accepted at the meeting.

Date: **August 10, 1999**

Time: **7-9 p.m.**

Place: **Comfort Inn
2024 State Route 39 NW
Dover, OH**

Public Comment Period

The U.S. EPA will accept written comments on this proposed Removal Action Plan and the other clean-up alternatives presented in the Feasibility Study during a 30-day public comment period:

August 9 to September 7, 1999

A pre-addressed comment form is provided in this Removal Action Plan.

Comment Form

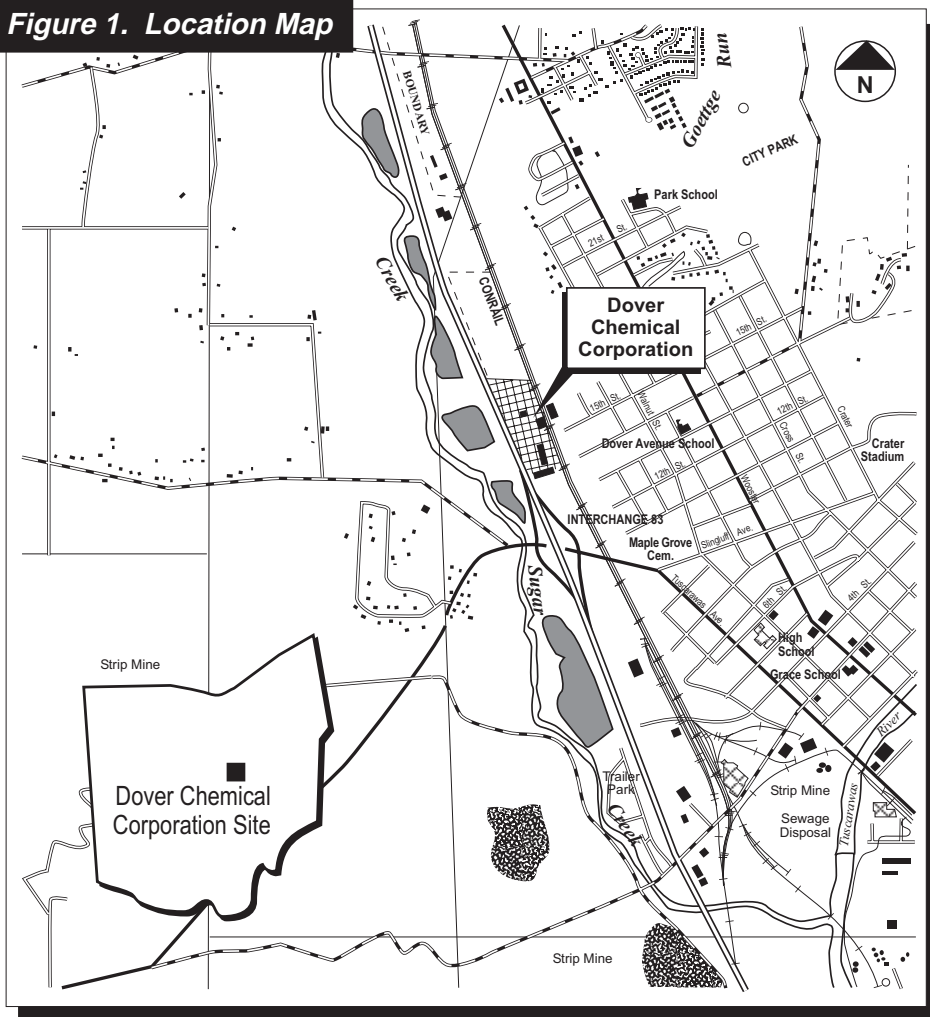
Name _____

Address _____

City _____ State _____

Zip _____

Figure 1. Location Map



INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) has completed the review process and approved a document called a Feasibility Study submitted by Dover Chemical Corporation for the Site in Dover, Ohio. The Feasibility Study addresses contamination in four areas: plant area soils, plant area ground water, lagoon area soils/sediments, and the detached ground-water plume. The Feasibil-

ity Study analyzed and compared cleanup alternatives for all four areas. However, this proposed Removal Action Plan doesn't address the detached ground-water plume issue. The detached ground-water plume will be addressed under a separate clean-up action.

The Feasibility Study evaluated a range of alternatives to clean up contamination at the site. This Removal Action Plan announces the U.S. EPA's

proposed clean-up plan and describes why it is being recommended. This Removal Action Plan also lists other alternatives that were considered by the U.S. EPA. A detailed description of the recommended alternatives and other alternatives that were considered is presented in the Feasibility Study Report.¹

Public input on U.S. EPA's recommended clean-up plan and other alternatives is important to the clean-up process. Based on new information obtained through public comment, the U.S. EPA may modify its recommended clean-up plan or select another alternative presented in this Removal Action Plan. The public is encouraged to review and comment on all of the clean-up alternatives evaluated by the U.S. EPA.

SITE BACKGROUND

The Dover Chemical Corporation is located just off of Interstate 77 (I-77) at Davis Street and West 15th Street, Tuscarawas County, Dover, Ohio (see Site Location Map on page 1). Dover Chemical owns three parcels of land near the Dover city limits that total approximately 60 acres. The chemical manufacturing facility, located on the 20-acre main parcel, is bounded on the west by I-77, on the south by industrial property, on the east by a railroad line, and on the north by an open field. The remaining parcels owned by Dover Chemical are undeveloped property in the residential area to the east of the facility, and undeveloped property between I-77 and Sugar Creek. The property west of I-77 contains an 8-acre pond (referred to as the lagoon), which is up to 28 feet deep and was formerly a borrow pit used during the construction of I-77.

Dover Chemical has operated a manufacturing facility at the Site since 1950. The facility produces products that are used to manufacture extreme pressure lubricants, plasticizers, and flame retardants for vinyl products. Site activities from the 1950s to the early 1970s introduced contaminants into soil and ground water in the vicinity of the Dover Chemical plant. The contaminants entered the environment through a low-lying area in the southwest corner of the facility (also known as Area H), through the temporary storage of chemicals on the ground next to Building 21, and through unintentional process spills and leaks. Area H is believed to have been the principal source of contaminants in soils and ground water at the facility.

Since the mid-1980s, the on-site ground-water contamination has been contained by the pumping of on-site production wells, which generate more than 1 million gallons per day of non-contact cooling water for the plant. Until 1987, waste water from the plant was discharged via a ditch known as the canal through the lagoon, which ultimately discharged to Sugar Creek. Actions were taken in 1987 and 1988 under the direction of Ohio EPA Pollution Discharge Elimination System (PDES) to improve waste-water treatment. In 1987, as part of treatment system upgrades, treated water was redirected through a pipe directly to Sugar Creek, thus bypassing the canal and lagoon. The lagoon water was pumped and treated on-site prior to discharge to the Sugar Creek. As a result, site contaminants previously found in the lagoon surface water and the adjacent shallow

ground water at low concentrations are no longer present.

Several environmental investigations were conducted at Dover Chemical to assess the extent and potential impact of contaminants that were inadvertently released to the environment. A number of interim clean-ups and other steps have been taken at the site to reduce the risk posed by the contaminants. These investigations and actions have been conducted with the concurrence and oversight of U.S. EPA Region 5 and the Ohio EPA.

Investigative Activities

Investigations conducted at the site confirmed the presence of volatile organic compounds (VOCs) in soil and ground water, and also identified the presence of additional site-related constituents such as carbon tetrachloride, 1,4-dichlorobenzene, hexachlorobenzene, tetrachloroethene, dibenzofurans (furans), and polychlorinated dibenzodioxins (more commonly known as dioxin). Although these and other chemicals have been found at the site, dioxin contamination poses the greatest risk.

Based on the Remedial Investigation/Feasibility Study (RI/FS) investigation results in 1991, the U.S. EPA requested that Dover Chemical take interim actions to reduce the mobility and potential for contact with soil containing dioxin and furans. This action was taken to reduce the potential risk to workers from direct contact with on-site soils contaminated with dioxin and furans at the site.

The interim soil clean-up action taken to reduce direct human exposure included removing contaminated soil above residential clean-up levels, restricting access to portions of the site,

¹ For non-time critical removal actions such as the one proposed for the Dover Chemical site, section 300.415 (n)(4) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires publication of a notice describing U.S. EPA's engineering evaluation/cost analysis (EE/CA) or its equivalent, in this case the Feasibility Study and this Removal Action Plan. The EE/CA or its equivalent must also be made available to the public for comment. Accordingly, the Feasibility Study and this Removal Action Plan are available for review at the Dover Chemical site Information Repository at the Dover Public Library or at U.S. EPA's Region 5 office. This Removal Action Plan summarizes information contained in the Feasibility Study for the Dover Chemical Corporation site. Please consult the Feasibility Study and other documents in the Information Repository for more detailed information.

and removing dioxin/furan contaminated soil in all off-site areas.

Information gathered from all of the investigations conducted at this site have identified four areas of concern. These areas are:

Plant-area soil—includes all soil located in the production area as well as soil in the unused portions of the immediate plant area.

Lagoon and canal area soil and sediment—the area between I-77 and Sugar Creek.

Plant-area ground water—a plume of ground-water contamination currently found underneath the plant area. As mentioned above, this contamination is currently being contained and removed by the existing production wells and waste-water treatment system.

Detached ground-water plume—contamination that separated from the plant-area ground-water plume. The detached ground-water contamination will be addressed separately because it may include some contamination from a facility other than Dover Chemical.

SUMMARY OF SITE RISK

U.S. EPA assessed the risk to human health and the environment posed by contaminants at the site.

The risk assessment identified several chemicals of concern at the site. The chemicals that were found to make up the majority of the public health risks at the site were 1,2,4-trichlorobenzene and dioxin/furans in soil. Dioxin and furan compounds do not break down easily; they are very persistent in the environment. They also have the potential to build up in animals through the food chain, a process known as bioaccumulation. Acetone, carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, 1,3-dichlorobenzene, 1,4-dichloroben-

zene, hexachlorobenzene, alpha-BHC, dioxin/furans, and manganese make up the majority of public health risks in ground water. Area residents are not expected to come in contact with contaminated ground water because a public water supply is available and current institutional controls in the area prohibit installation of new wells.

Long-term exposure to dioxin/furans, carbon tetrachloride, hexachlorobenzene, and alpha-BHC can lead to an increased risk of cancer. Long-term exposure to acetone, carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichlorobenzene, and dioxin/furans all cause adverse effects to the liver. Acetone also affects the kidney, and 1,2,4-trichlorobenzene affects the adrenal gland. Overexposure to manganese may cause adverse health effects to the central nervous system; however, manganese is a naturally occurring element and is present in a number of foods.

The most likely routes of exposure to the constituents present in the soil and ground water are by accidental hand-to-mouth transfer of soil or ingestion of ground water, absorption of chemicals through the skin following direct contact with contaminated soil or ground water, or inhalation of dust from contaminated soil or fumes from the ground-water. The Site is currently fenced, which prevents access by the general public.

An ecological risk assessment was conducted for Sugar Creek, the lagoon, the canal, and a wooded area near the lagoon. Aquatic life could be exposed to contaminants in the Sugar Creek surface water and sediment, and birds could be exposed when feeding in the affected areas. According to the risk assessment, the areas presenting the greatest risk were the low-lying area in the canal/lagoon area, and the abandoned canal soils.

POTENTIAL CLEAN-UP ALTERNATIVES

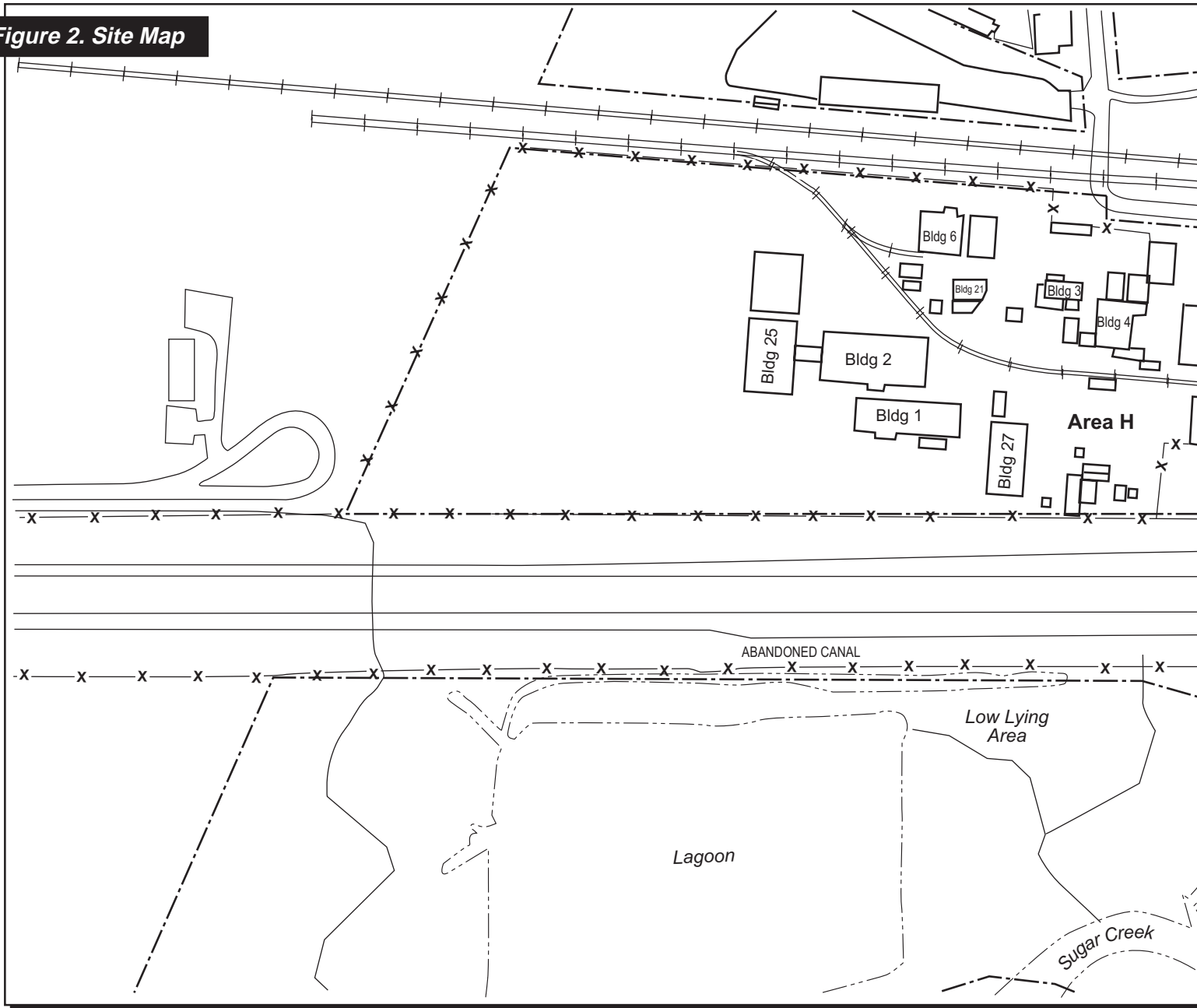
A set of clean-up alternatives was developed for each of the three areas of concern at the site: plant area soils, plant area ground water, and the lagoon area soils. As previously mentioned the detached ground-water plume will be addressed under a separate action. The clean-up alternatives were screened based on three broad criteria: effectiveness, implementability, and cost. Effectiveness includes protectiveness of public health and the environment, compliance with federal and state regulations, and long-term permanence of the action. Implementability includes the feasibility and availability of the technology being used. Cost includes both initial capital costs and long-term operations and maintenance costs.

The following clean-up alternatives were developed and evaluated in the Feasibility Study for the Dover Chemical site:

Plant Area Soils (S) Clean-up Alternatives

- Alternative S-1 - No Action.
- Alternative S-2 - Long-Term Maintenance of Existing Containment.
- Alternative S-3 - Enhanced In-Place Containment.
- Alternative S-4 - Excavation and On-Site Containment.
- Alternative S-5 - Excavation and Off-Site Disposal.
- Alternative S-6 - Excavation and Thermal Treatment by either: Off-Site Incineration, On-Site Incineration, Off-Site Thermal Desorption, or On-Site Thermal Desorption.
- Alternative S-7 - Treatment of Hot Spot Soils with Isolation of Remaining Soils.

Figure 2. Site Map



**Ground-water (GW)
Clean-up Alternatives**

- Alternative GW-1 - No Action.
- Alternative GW-2 - Ground-water Extraction from Wells PW-2, PW-4, and PW-5, and treatment by Air Stripping and Filtration.
- Alternative GW-3 - Ground-water Extraction from well PW-5 and Three New Wells To Enhance Cleanup Time, and Treatment by Air Stripping and Filtration.
- Alternative GW-4 - Ground-water Extraction from the Four

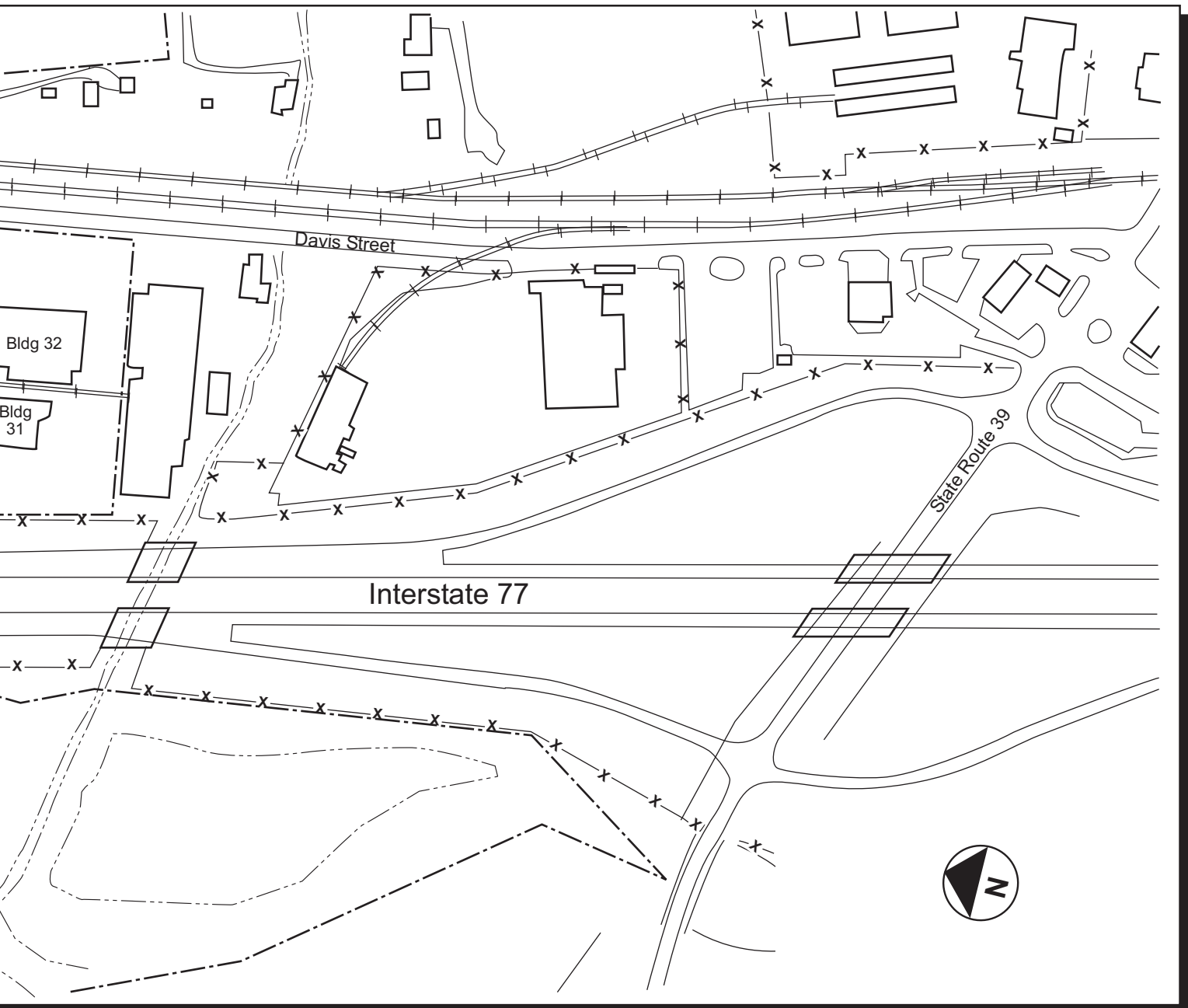
Wells in Alternative GW-3 with a 50% Increased Flow Rate, and Treatment by Air Stripping and Filtration.

**Lagoon Area (LA)
Clean-up Alternatives**

- Alternative LA-1 - No Action.
- Alternative LA-2 - Institutional Controls, including Fencing, Posting of Signs, and Routine Maintenance.
- Alternative LA-3 - In-Place Capping of Lagoon Area Soil.
- Alternative LA-4 - Excavation and On-Site Containment of

Lagoon Area Soil and Canal Sediments with Other On-Site Soils.

- Alternative LA-5 - Excavation and Off-Site Disposal of Lagoon Area Soil and Canal Sediment.
- Alternative LA-6 - Excavation, Treatment, and Backfill/ Disposal of Lagoon Area Soil and Canal Sediment.
- Alternative LA-7 - Treatment of Hot Spots Canal Sediments with Isolation of Remaining Soil.



ALTERNATIVES CONSIDERED

The clean-up alternatives for the three areas were evaluated in the Feasibility Study. Selected clean-up alternatives formulated for each of the three areas were subsequently combined to form comprehensive site-wide alternative packages. The following site-wide alternatives packages, in order of cost, were considered by U.S. EPA:

Alternative ON-1: Plant Area

Soil - Alternative S-1
Ground Water - Alternative GW-1

Lagoon Area Soil - Alternative LA-1

Capital Cost: \$0

O&M Cost: \$0

Present Net Worth: \$0

Alternative ON-2: Plant Area

Soil - Alternative S-2

Ground Water - Alternative GW-2

Lagoon Area Soil - Alternative LA-2

Capital Cost: \$1,753,600

O&M Cost: \$804,200

Present Net Worth: \$14,116,100

Alternative ON-3: Plant Area

Soil - Alternative S-3

Ground Water - Alternative GW-2

Lagoon Area Soil - Alternative LA-3

Capital Cost: \$2,694,100

O&M Cost: \$822,900

Present Net Worth: \$15,344,100

Alternative ON-4: Plant Area

Soil - Alternative S-4

Ground Water - Alternative GW-3

Lagoon Area Soil - Alternative LA-4

Capital Cost: \$6,317,900

O&M Cost: \$759,300

Present Net Worth: \$17,990,200

Alternative ON-6: Plant Area Soil

- Alternative S-7

Ground Water - Alternative GW-2

Lagoon Area Soil - Alternative LA-7

Capital Cost: \$22,405,600

O&M Cost: \$803,800

Present Net Worth: \$34,762,000

Alternative ON-5: Plant Area Soil -
Alternative S-6
Ground Water - Alternative GW-3
Lagoon Area Soil - Alternative LA-6
Capital Cost: \$46,419,200
O&M Cost: \$745,400
Present Net Worth: \$57,877,800

RECOMMENDED ALTERNATIVE

Upon review of all of the clean-up alternatives for the three areas of concern, the U.S. EPA is recommending a new alternative package referred to as Alternative ON-7.

Alternative ON-7: Plant Area Soil -
Alternative S-5
Ground Water - Alternative GW-3
Lagoon Area Soil - Alternative LA-5
Capital Cost: \$10,624,300
O&M Cost: \$803,800
Present Net Worth: \$22,980,700

This alternative combines components Alternative S-5 - Excavation and Off-Site Disposal; Alternative GW-3 - Ground-water Extraction from well PW-5 and Three New Wells to Enhance Cleanup Time, and Treatment by Air Stripping and Filtration; and Alternative LA-5 - Excavation and Off-Site Disposal of Lagoon Area Soil and Canal Sediment. This proposed alternative package includes: excavation of the plant area soil exceeding 5 parts per billion (ppb) dioxin/furan; excavation of the lagoon and abandoned canal dioxin/furan contaminated soil/sediment at levels greater than the screening level in the screening ecological assessment; off-site disposal of the excavated material to a permitted facility; the enhancement and continued operation of the ground-water pump and treat system; the installation of a barrier around the lagoon area; and implementation of institutional controls. The institutional controls will provide for access restriction, and will limit the future use of the site to industrial activities only.

Based on human health risks, dioxin/furan-contaminated plant-area soil

greater than 5 ppb will be excavated to a maximum depth of four feet which is greater than the typical industrial building foundation depth. These contaminated soils will be disposed of in an approved landfill, and treated if necessary. If the concentration of dioxin in the soils below 4 feet remains above the action level of 5 ppb, a marker, such as an orange polyethylene netting, will be laid on top of the soil at this depth in order to make it clear to anyone excavating in these areas that these soils are not to be disturbed. The area will then be backfilled with clean soil to present grade, designed with consideration for future site use and the prevention of soil erosion. A restriction will be placed on the property deed to restrict excavation below a depth of 4 feet.

Screening levels for dioxin/furan in soil and sediment were identified based on a screening ecological assessment. Screening levels represent the levels of dioxin/furan in soil and sediment below which adverse effects on wildlife are not expected. Screening levels are not intended to be soil/sediment clean-up levels which, based on further study, may be higher. Final soil/sediment clean-up levels have not been developed for this part of the site because of the cost of conducting a site-specific study. It was found to be more cost-effective to remove the source of contamination for this area of the site rather than conduct a site-specific study in order to develop final soil/sediment clean-up levels.

The screening level for dioxin/furan in soil and sediment which have been identified for this part of the site are essentially background levels of dioxin/furan in soil and sediment for this area of the state. Based on the screening ecological assessment, soil/sediment contaminated at levels greater than the dioxin/furan screening level, or back-

EVALUATING THE ALTERNATIVES

U.S. EPA typically uses three broad criteria to compare the cleanup alternatives for Non-Time Critical Removal Actions and to recommend a practical clean-up alternative. The evaluation criteria consist of:

1. Effectiveness - considers the length of time needed to implement a cleanup alternative; compliance with federal and state regulations; and the risks the alternative poses to workers, residents, and the environment during implementation.
2. Implementability - considers the technical and administrative feasibility of implementing the cleanup alternative, such as the availability of goods and services.
3. Cost - includes estimated capital, operation, and maintenance costs, as well as present worth costs. Present worth cost is an alternative's total cost over time in terms of today's dollars.

ground level, will be excavated to a maximum depth of 3 feet for the first 50 feet of the old canal and 1 foot along the rest of the canal. In addition, 1 foot of contaminated soil over a 4,400-square-foot low-lying wooded area will be excavated. If the concentration of dioxin/furan in this soil and sediment remains above the screening level, a marker, such as an orange polyethylene netting, will be laid on top of the soil at this depth in order to make it clear to anyone excavating in these areas that these soils are not to be dis-

turbed. The area will then be back-filled to present grade to prevent erosion. Excavated soil will be disposed of in an approved landfill. A restriction will be placed on the property deed to restrict excavation below the excavated depth.

Alternative ON-7 is considered the most favorable of all the alternatives because it meets the requirements of all of U.S. EPA's evaluation criteria. This alternative would protect human health and the environment by removing the contaminated soil/sediment. The alternative would also limit risks posed by past site activities, and would provide long-term permanence by eliminating potential future exposure and migration of site-related contaminants. In addition, Alternative ON-7 will comply with federal and state regulations. This alternative is readily implementable and does not require any methods or equipment that are not proven or readily available. Al-

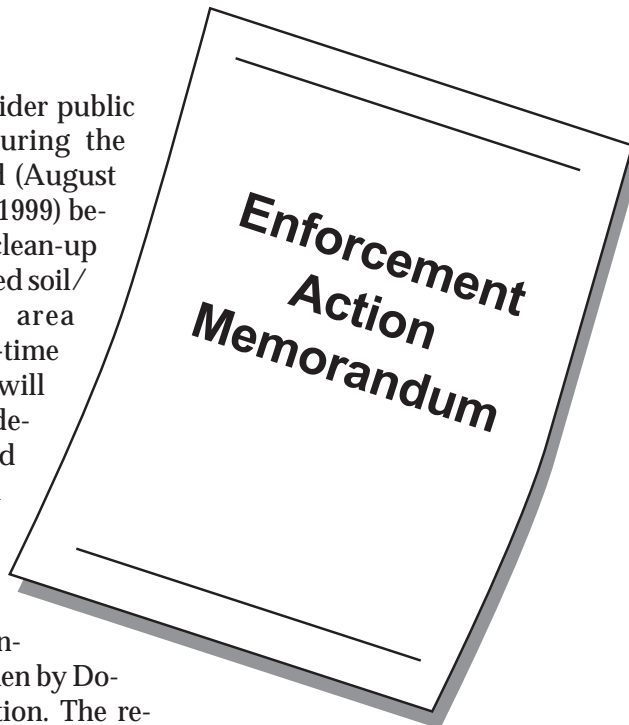
though not the lowest cost alternative, of the three alternatives that are considered most effective (ON-5, ON-6, ON-7), it has the lowest cost.

THE NEXT STEP

The U.S. EPA will consider public comments received during the public comment period (August 9, 1999 to September 7, 1999) before selecting a final clean-up plan for the contaminated soil/sediment and plant area groundwater. The non-time critical removal action will be described in a final decision document, called an Enforcement Action Memorandum, that will be available for public review.

This removal action is anticipated to be undertaken by Dover Chemical Corporation. The re-

moval action is considered non-time critical because a planning period of at least six months exists prior to the initiation of the removal activities.



For Additional Information

If you have questions about the information in this Removal Action Plan or would like additional information about the Dover Chemical Corporation site, the Feasibility Study or the Superfund program, this information is available for review in the site Information Repository at the Dover Public Library. The Dover Public Library is at 525 North Walnut, Dover, Ohio 44622 and is open from 9:00am to 8:00pm (Monday - Thursday), 9:00am to 6:00pm on Friday, and 9:00am to 5:00pm on Saturday. An Administrative Record which contains all of the information upon which the selection of the clean-up plan will be based, also has been established at the Information Repository and at the U.S. EPA Region 5 office in Chicago. For additional information, please contact:

U.S. EPA Contacts

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Mailing List Additions

If you did not receive this fact sheet in the mail, you are not on the mailing list for the Dover Chemical Corporation Site. To add your name, or to make a correction, please fill out this form and mail it to:

Robert Paulson, P-19J
U.S. EPA Region 5
Office of Public Affairs
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Name _____

Address _____

Affiliation _____

Once you are on the mailing list, you will automatically receive information from U.S. EPA regarding the Dover Chemical Corporation Site.



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